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Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) |
|---|---|---|
| | 09/698,550 | MOLOUDI ET AL. |
| | Examiner | Art Unit |
| | Marceau Milord | 2682 |

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *11 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-93* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *33-38 and 70-75* is/are allowed.

6)☒ Claim(s) *1-32,39-69 and 76-93* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-32, 39-69, 76-93 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mole et al (US Patent No 6226509 B1) and Hornak et al (US Patent No 5678222).

Regarding claims 1- 5, 23-24, Mole et al discloses a mixer (figs. 3-4), comprising: a track and hold circuit to track and hold a first signal which is the first mixer (46 of fig. 3) which is also the first mixer in response to a second signal (col. 4, lines 1-52; col. 7, lines 12-63).

However, Mole et al does not specifically disclose the feature of a bandpass circuit in cooperation with the track and hold circuit; wherein the track and hold circuit comprises first and second output signals, the mixer further comprising a buffer to combine the first and second output signals; wherein the bandpass circuit comprises an inductor and capacitor each being coupled to the track and hold circuit, the inductor and capacitor cooperating to provide a time constant related to a frequency of the first signal.

On the other hand, Hornak et al, from the same field of endeavor, discloses a time-share mixer circuit and a frequency converter, an I-Q modulator, and an I-Q demodulator. A switching signal drives the time-share mixer circuit to alternate between two output signals (col. 6, lines 22-51). Furthermore, Hornak shows in figure 19, a filter that receives the signal from the output port of the time-share mixer. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor and a capacitor 289 to the input of the amplifier. Similarly, the second filter stage includes a resistor that receives the signal from the first filter stage and couples it to an input of an amplifier (col. 9, lines 16-50). A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 297 and a capacitor 299 to the input of the amplifier 293. The third filter stage includes a resistor that receives the signal from the second filter stage and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 307 and a capacitor 309 to the input of the amplifier 303. The output from the third filter stage is provided to the sample-and-hold element and thence to the A-to-D converter. The sample-and-hold element is controlled by the switching signal source (col. 18, line 45- col. 19, line 65) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hornak to the system of Mole in order to use a time-shared mixer and local oscillator to modulate, demodulate, and change the carrier frequency of an RF signal.

Regarding claim 6, Mole et al as modified discloses a mixer (figs. 3-4), wherein the switch comprises a transistor having a gate coupled to the second signal (col. 9, lines 12-59).

Regarding claim 7, Mole et al as modified discloses a mixer (figs. 3-4), comprises a source coupled to the first signal (col. 7, lines 51- col. 8, line 10).

Regarding claim 8, Mole et al discloses a mixer (figs. 3-4), wherein the transistor further comprises a drain, and the bandpass circuit comprises a capacitor coupled to the drain (col. 9, lines 1-59)

Regarding claim 9, Mole et al as modified discloses a mixer (figs. 3-4), wherein the bandpass circuit comprises a capacitor coupled to the drain (col. 9, lines 1-59).

Regarding claim 10, Mole et al as modified discloses a mixer (figs. 3-4); wherein the bandpass circuit further comprises an inductor coupled to the source of the transistor (col. 9, lines 1-59).

Regarding claim 11, Mole et al as modified discloses a mixer (figs. 3-4), wherein the capacitor and inductor cooperate to provide a time constant related to a frequency of the first signal (col. 12, lines 12-53; col. 13,lines 1-26).

Regarding claim 12, Mole et al as modified discloses a mixer (figs. 3-4); wherein the bandpass circuit further comprises an inductor coupled to the source of the transistor (col. 9, lines 1-59).

Regarding claim 13, Mole et al as modified discloses a mixer (figs. 3-4), (fig. 5 and fig. 19) wherein the transistor further comprises a drain, and the bandpass circuit comprises a capacitor coupled to the drain (col. 12, lines 5-col. 13, line 16).

Regarding claim 14, Mole et al as modified discloses a mixer (figs. 3-4), wherein the capacitor and inductor cooperate to provide a time constant related to a frequency of the first signal (col. 12, lines 12-53; col. 13,lines 1-26).

Regarding claim 25, Mole et al as modified discloses a mixer (figs. 3-4), wherein the second transistor further comprises a drain coupled to the output of the transistor (col. 12, lines 5-col. 13, line 16).

Regarding claim 26, Mole et al as modified discloses a mixer (figs. 3-4), wherein the bandpass circuit comprises a capacitor coupled to the output of the transistor (col. 9, lines 5-59).

Regarding claim 27, Mole et al as modified discloses a mixer (figs. 3-4), wherein the second transistor further comprises a source, and the bandpass circuit further comprises an inductor coupled to the source of the second transistor (col. 9, lines 1-59).

Regarding claim 28, Mole et al as modified discloses a mixer (figs. 3-4), wherein the capacitor and inductor cooperate to provide a time constant related to a frequency of the first signal (col. 12, lines 12-53; col. 13,lines 1-26).

Regarding claim 29, Mole et al as modified discloses a mixer (figs. 3-4), wherein the second transistor further comprises a source, and the bandpass circuit further comprises an inductor coupled to the source of the second transistor (col. 9, lines 1-59).

Regarding claim 30, Mole et al as modified discloses a mixer (figs. 3-4), wherein the bandpass circuit comprises a capacitor coupled to the output of the transistor (col. 9, lines 1-59)

Regarding claim 31, Mole et al as modified discloses a mixer (figs. 3-4), wherein the capacitor and inductor cooperate to provide a time constant related to a frequency of the first signal (col. 12, lines 12-53; col. 13,lines 1-26).

Regarding claim 32, Mole et al as modified discloses a mixer (figs. 3-4), wherein the track and hold circuit and the bandpass circuit each comprises a differential circuit, the first and second signals each being differential signals (col. 7, line 12- col. 8, line 54)

Regarding claims 39 and 43, Mole et al discloses a mixer (figs. 3-4) comprising: a track and hold circuit having a signal input, a control input, and a mixed signal output (col. 4, lines 1-52; col. 7, lines 12-63).

However, Mole et al does not specifically disclose the feature of bandpass circuit coupled to the signal input and the mixed signal output.

On the other hand, Hornak et al, from the same field of endeavor, discloses a time-share mixer circuit and a frequency converter, an I-Q modulator, and an I-Q demodulator. A switching signal drives the time-share mixer circuit to alternate between two output signals (col. 6, lines 22-51). Furthermore, Hornak shows in figure 19, a filter that receives the signal from the output port of the time-share mixer. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor and a capacitor 289 to the input of the amplifier. Similarly, the second filter stage includes a resistor that receives the signal from the first filter stage and couples it to an input of an amplifier (col. 9, lines 16-50). A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 297 and a capacitor 299 to the input of the amplifier 293. The third filter stage includes a resistor that receives the signal from the second filter stage and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 307 and a capacitor 309 to the input of the amplifier 303. The output from the third filter stage is provided to the sample-and-hold element and thence to the A-to-D converter. The sample-and-hold element is controlled by the switching signal source (col. 18, line 45- col. 19, line 65) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hornak to the system of Mole in

order to use a time-shared mixer and local oscillator to modulate, demodulate, and change the carrier frequency of an RF signal.

Regarding claim 40, Mole et al discloses a mixer (figs. 3-4) further comprising an input circuit coupled to the signal input (col. 12, lines 5-57).

Regarding claim 41, Mole et al as modified discloses a mixer (figs. 3-4) wherein the mixed signal output comprises first and second output signals, the mixer further comprising a buffer to combine the first and second output signals (col. 7, lines 12-63).

Regarding claim 42, Mole et al as modified discloses a mixer (figs. 3-4) wherein the bandpass circuit comprises an inductor coupled to the signal input and a capacitor coupled to the mixed signal output (col. 9, lines 1-59)

Regarding claim 44, Mole et al as modified discloses a mixer (figs. 3-4) wherein the switch comprises a transistor having a gate coupled to the control input (col. 9, lines 12-59).

Regarding claim 45, Mole et al as modified discloses a mixer (figs. 3-4) wherein the transistor further comprises a source coupled to the signal input (col. 12, lines 1-49).

Regarding claim 46, Mole et al as modified discloses a mixer (figs. 3-4) wherein the transistor further comprises a drain, and the bandpass circuit comprises a capacitor coupled to the drain (col. 9, lines 1-59).

Regarding claim 47, Mole et al as modified discloses a mixer (figs. 3-4) wherein the bandpass circuit further comprises an inductor coupled to the signal input (col. 12, lines 1-49).

Regarding claim 48, Mole et al as modified discloses a mixer (figs. 3-4) wherein the capacitor and inductor cooperate to provide a time constant related to a signal frequency applied to the signal input (col. 12, lines 5-col. 13, line 16).

Regarding claim 49, Mole et al as modified discloses a mixer (figs. 3-4) wherein the bandpass circuit further comprises an inductor coupled to the signal input (col. 9, lines 1-59).

Regarding claim 50, Mole et al as modified discloses a mixer (figs. 3-4) wherein the transistor further comprises a drain, and the bandpass circuit comprises a capacitor coupled to the drain (col. 9, lines 1-59).

Regarding claim 51, Mole et al as modified discloses a mixer (figs. 3-4) wherein the capacitor and inductor cooperate to provide a time constant related to a signal frequency applied to the signal input (col. 12, lines 5-col. 13, line 16).

Regarding claim 52, Mole et al as modified discloses a mixer (figs. 3-4) wherein the track and hold circuit comprises a transistor having an input coupled to the signal input and an output coupled to the mixed signal output, and a current source coupled to the mixed signal output, the current source being controlled by the control input (col. 12, lines 5-col. 13, line 16).

Regarding claim 53, Mole et al as modified discloses a mixer (figs. 3-4) wherein the current source comprises a second transistor having a gate coupled to the control input (col. 12, lines 5-col. 13, line 16).

Regarding claim 54, Mole et al as modified discloses a mixer (figs. 3-4) wherein the second transistor further comprises a drain coupled to the mixed signal output (col. 12, lines 5-col. 13, line 16).

Regarding claim 55, Mole et al as modified discloses a mixer (figs. 3-4) wherein the bandpass circuit comprises a capacitor coupled to the mixed signal output (col. 9, lines 1-59).

Regarding claim 56, Mole et al as modified discloses a mixer (figs. 3-4) wherein the second transistor further comprises a source, and the bandpass circuit further comprises an inductor coupled to the drain of the second transistor (col. 12, lines 5-col. 13, line 16).

Regarding claim 57, Mole et al as modified discloses a mixer (figs. 3-4) wherein the capacitor and inductor cooperate to provide a time constant related to a signal frequency applied to the signal input (col. 12, lines 12-53; col. 13,lines 1-26).

Regarding claim 58, Mole et al as modified discloses a mixer (figs. 3-4) wherein the second transistor further comprises a source, and the bandpass circuit further comprises an inductor coupled to the source of the second transistor (col. 12, lines 5-col. 13, line 16).

Regarding claim 59, Mole et al as modified discloses a mixer (figs. 3-4) wherein the bandpass circuit comprises a capacitor coupled to the mixed signal output (col. 9, lines 1-59).

Regarding claim 60, Mole et al discloses a mixer (figs. 3-4) wherein the capacitor and inductor cooperate to provide a time constant related to a signal frequency applied to the signal input (col. 12, lines 12-53; col. 13,lines 1-26).

Regarding claim 61, Mole et al as modified discloses a differential mixer (figs. 3-4): a track and hold circuit having a differential signal input, a differential control input, and a differential mixed signal output (col. 4, lines 1-52; col. 7, lines 12-63).

However, Mole et al does not specifically disclose the feature of a bandpass circuit coupled to the differential signal input and the differential mixed signal output.

On the other hand, Hornak et al, from the same field of endeavor, discloses a time-share mixer circuit and a frequency converter, an I-Q modulator, and an I-Q demodulator. A switching signal drives the time-share mixer circuit to alternate between two output signals (col. 6, lines

22-51). Furthermore, Hornak shows in figure 19, a filter that receives the signal from the output port of the time-share mixer. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor and a capacitor 289 to the input of the amplifier. Similarly, the second filter stage includes a resistor that receives the signal from the first filter stage and couples it to an input of an amplifier (col. 9, lines 16-50). A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 297 and a capacitor 299 to the input of the amplifier 293. The third filter stage includes a resistor that receives the signal from the second filter stage and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 307 and a capacitor 309 to the input of the amplifier 303. The output from the third filter stage is provided to the sample-and-hold element and thence to the A-to-D converter. The sample-and-hold element is controlled by the switching signal source (col. 18, line 45- col. 19, line 65) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hornak to the system of Mole in order to use a time-shared mixer and local oscillator to modulate, demodulate, and change the carrier frequency of an RF signal.

Regarding claims 76, 80, 87-88, Mole et al discloses a mixer (figs. 3-4), comprising: track and hold means for tracking and holding a first signal in response to a second signal; the first signal being within the frequency band (col. 4, lines 1-52; col. 7, lines 12-63).

However, Mole et al does not specifically disclose the feature of a limiting means for limiting the response of the track and hold means to a frequency band.

On the other hand, Hornak et al, from the same field of endeavor, discloses a time-share mixer circuit and a frequency converter, an I-Q modulator, and an I-Q demodulator. A switching signal drives the time-share mixer circuit to alternate between two output signals (col. 6, lines 22-51). Furthermore, Hornak shows in figure 19, a filter that receives the signal from the output port of the time-share mixer. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor and a capacitor 289 to the input of the amplifier. Similarly, the second filter stage includes a resistor that receives the signal from the first filter stage and couples it to an input of an amplifier (col. 9, lines 16-50). A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 297 and a capacitor 299 to the input of the amplifier 293. The third filter stage includes a resistor that receives the signal from the second filter stage and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 307 and a capacitor 309 to the input of the amplifier 303. The output from the third filter stage is provided to the sample-and-hold element and thence to the A-to-D converter. The sample-and-hold element is controlled by the switching signal source (col. 18, line 45- col. 19, line 65) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hornak to the system of Mole in order to use a time-shared mixer and local oscillator to modulate, demodulate, and change the carrier frequency of an RF signal.

Regarding claim 77, Mole et al as modified discloses a mixer (figs. 3-4), further comprising means for buffering first signal before being applied to the track and hold (col. 7, lines 12-63).

Regarding claim 78, Mole et al as modified discloses a mixer (figs. 3-4), wherein the track and hold means comprises first and second output signals, the mixer further comprising means for combining the first and second output signals (col. 7, lines 51- col. 8, line 10).

Regarding claim 79, Mole et al as modified discloses a mixer (figs. 3-4), wherein the limiting means comprises an inductor and capacitor each being coupled to the track and hold means (col. 12, lines 5-col. 13, line 16).

Regarding claim 81, Mole et al as modified discloses a mixer (figs. 3-4), wherein the switch comprises a transistor having a gate coupled to the second signal (col. 9, lines 12-59).

Regarding claim 82, Mole et al as modified discloses a mixer (figs. 3-4); wherein the transistor filter comprises a source coupled to the first signal (col. 9, lines 12-59).

Regarding claim 83, Mole et al as modified discloses a mixer (figs. 3-4), wherein the transistor further comprises a drain, and the limiting means comprises a capacitor coupled to the drain (col. 12, lines 5-col. 13, line 16).

Regarding claim 84, Mole et al as modified discloses a mixer (figs. 3-4), wherein the limiting means further comprises an inductor coupled to the source of the transistor (col. 12, lines 5-col. 13, line 16).

Regarding claim 85, Mole et al as modified discloses a mixer (figs. 3-4) wherein the bandpass circuit further comprises an inductor coupled to the source of the transistor (col. 12, lines 5-col. 13, line 16).

Regarding claim 86, Mole et al as modified discloses a mixer (figs. 3-4), wherein the transistor further comprises a drain, and the bandpass circuit comprises a capacitor coupled to the drain (col. 12, lines 5-col. 13, line 16).

Regarding claim 89, et al as modified discloses a mixer (figs. 3-4), wherein the second transistor further comprises a drain coupled to the output of the transistor (col. 12, lines 5-col. 13, line 16).

Regarding claim 90, Mole et al discloses a mixer (figs. 3-4), wherein the limiting means comprises a capacitor coupled to the output of the transistor (col. 12, lines 5-col. 13, line 16).

Regarding claim 91, Mole et al as modified discloses a mixer (figs. 3-4), wherein the second transistor further comprises a source, and the limiting means further comprises an inductor coupled to the source of the second transistor (col. 12, lines 5-col. 13, line 16).

Regarding claim 92, Mole et al as modified discloses a mixer (figs. 3-4), wherein the second transistor further comprises a source, and the limiting means further comprises an inductor coupled to the source of the second transistor (col. 12, lines 5-col. 13, line 16).

Regarding claim 93, Mole et al as modified discloses a mixer (figs. 3-4), wherein the limiting means comprises a capacitor coupled to the output of the transistor (col. 9, lines 1-59).

Regarding claims 15-22, Mole discloses a mixer (figs. 3-4), comprising: a track and hold circuit to track and hold a first signal (col. 4, lines 1-52; col. 7, lines 12-63).

However, Mole et al does not specifically disclose the feature of a second switch in a second path of the first one of the first differential signals, the first switch being controlled by a first one of the second differential signals and the second switch being controlled by a second one of the second differential signals; a third switch in a first path of a second one of the first differential signals and a fourth switch in a fourth path of the second one of the first differential signals, the third switch being controlled by the first one of the second differential signals and the fourth switch being controlled by a second one of the second differential signals.

On the other hand, Hornak et al, from the same field of endeavor, discloses a time-share mixer circuit and a frequency converter, an I-Q modulator, and an I-Q demodulator. A switching signal drives the time-share mixer circuit to alternate between two output signals (col. 6, lines 22-51). Furthermore, Hornak shows in figure 19, a filter that receives the signal from the output port of the time-share mixer. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor and a capacitor 289 to the input of the amplifier. Similarly, the second filter stage includes a resistor that receives the signal from the first filter stage and couples it to an input of an amplifier (col. 9, lines 16-50). A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 297 and a capacitor 299 to the input of the amplifier 293. The third filter stage includes a resistor that receives the signal from the second filter stage and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 307 and a capacitor 309 to the input of the amplifier 303. The output from the third filter stage is provided to the sample-and-hold element and thence to the A-to-D converter. The sample-and-hold element is controlled by the switching signal source (col. 18, line 45- col. 19, line 65) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hornak to the system of Mole in order to use a time-shared mixer and local oscillator to modulate, demodulate, and change the carrier frequency of an RF signal.

Regarding claims 62-69, Mole et al discloses a differential mixer (figs. 3-4), comprising: a track and hold circuit having a differential signal input, a differential control input, and a differential mixed signal output (col. 4, lines 1-52; col. 7, lines 12-63).

However, Mole et al does not specifically disclose the feature of a second switch between the first one of the differential inputs and the first one of the differential mixed signal outputs, the first switch being controlled by a first one of the differential control inputs and the second switch being controlled by a second one of the differential control inputs; a third switch between a second one of the differential inputs and a second one of the differential mixed signal outputs, and a fourth switch between the second one of the differential inputs and the second one of the differential mixed signal outputs, the third switch being controlled by a first one of the differential control inputs and the fourth switch being controlled by a second one of the differential control inputs.

On the other hand, Hornak et al, from the same field of endeavor, discloses a time-share mixer circuit and a frequency converter, an I-Q modulator, and an I-Q demodulator. A switching signal drives the time-share mixer circuit to alternate between two output signals (col. 6, lines 22-51). Furthermore, Hornak shows in figure 19, a filter that receives the signal from the output port of the time-share mixer. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor and a capacitor 289 to the input of the amplifier. Similarly, the second filter stage includes a resistor that receives the signal from the first filter stage and couples it to an input of an amplifier (col. 9, lines 16-50). A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 297 and a capacitor 299 to the input of the amplifier 293. The third filter stage includes a resistor that receives the signal from the second filter stage and couples it to an input of an amplifier. A switching element, driven by the switching signal from the port of the mixer circuit, alternately connects a capacitor 307 and a capacitor 309 to the input of the amplifier 303. The

output from the third filter stage is provided to the sample-and-hold element and thence to the A-to-D converter. The sample-and-hold element is controlled by the switching signal source (col. 18, line 45- col. 19, line 65) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the technique of Hornak to the system of Mole in order to use a time-shared mixer and local oscillator to modulate, demodulate, and change the carrier frequency of an RF signal.

Allowable Subject Matter

2. Claims 33-38, 70-75 are allowed.

***Response to Arguments***

3. Applicant's arguments with respect to claims 1-32, 39-69, 76-93 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marceau Milord whose telephone number is 571-272-7853. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, To H. Doris can be reached on 571-272-7629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MARCEAU MILORD

Marceau Milord
Primary Examiner
Art Unit 2682

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